

7

7

Paper Number

7

7

7

2-D1

Exhibit 2-D

~~1130-264~~ #
 IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Attorney Docket No. 046528/01031-³8

In re patent application of

Jed FAHEY et al.

Serial No. 08/840,234

Filed: April 11, 1997

For: CANCER CHEMOPROTECTIVE FOOD PRODUCTS

Group Art Unit: 1302

Examiner: Wong, L.

WONG
 17x1
 3-13-98

TRANSMITTAL

Assistant Commissioner for Patents
 Washington, D.C. 20231

FEB 25 1998
 GROUP 1100

Sir:

Transmitted herewith is an Amendment in the above-captioned application. The fee has been calculated as shown below. (Small entity fees indicated in parentheses.)

CLAIMS AS AMENDED						
(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Claims Remaining After Amendment		Highest Number Previously Paid For	Extra Claims	Rate	Fee
Total Claims	21	-	31	0	22.00	0.00
(Small Entity)					(11.00)	
Independent claims	2	-	11	0	80.00	0.00
(Small Entity)					(40.00)	
Multiple Dependent	2	-	0	2	260.00	130.00
(Small Entity)					(130.00)	
Extension of Time	One Month	Two Months	Three Months			
Fee	\$110	\$390	\$930			
(Small Entity)	(\$55)	(\$195)	(\$465)			
Total						\$130.00

A check in the amount of the above Total Fee is attached. This amount is believed to be correct; however, the Commissioner is hereby authorized to charge any deficiency or credit any overpayment to Deposit Account No. 19-0741.

03/10/1998 JARTIS 00000051 DAN:190741 06840234
 01 FC:204 3.00 CH 130.00 OP

Respectfully submitted,



Richard C. Peet
 Reg. No. 35,792

Date: February 25, 1998

FOLEY & LARDNER
 3000 K Street, N.W., Suite 500
 P.O. Box 25696
 Washington, D.C. 20007-8696
 (202) 672-5300

8

8

Paper Number

8

8

8

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Attorney Docket No. 046528/0109

In re patent application of

Jed W. FAHEY et al.

Serial No.: 08/840,234

Group Art Unit: 1302

Filed: April 11, 1997

Examiner: Wong, L.

For: CANCER CHEMOPROTECTIVE FOOD PRODUCTS

INFORMATION DISCLOSURE STATEMENT
UNDER 37 CFR §1.56 and §1.97

Assistant Secretary and Commissioner
of Patents and Trademarks
Washington, D.C. 20231

Sir:

Submitted herewith on a modified Form PTO-1449 is a listing of a document known to applicants in order to comply with applicants' duty of disclosure pursuant to 37 CFR §1.56

The submission of the document herewith, which is not a statutory bar, is not intended as an admission that such document constitutes prior art against the claims of the present application or that such document is considered material to patentability as defined in 37 CFR §1.56(b). Applicants do not waive any rights to take any action that would be appropriate to antedate or otherwise remove as a competent reference any document which is determined to be a prima facie prior art reference against the claims of the present application.

Serial No: 08/840,234

TIMING OF THE DISCLOSURE

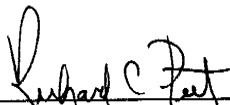
The instant Information Disclosure Statement is being filed before the mailing of the first Office Action on the merits under 37 CFR §1.97(b)(3). Applicants respectfully request that the Information Disclosure Statement and accompanying document be considered by the Examiner and be made of record in the present application and that an initialed copy of form PTO-1449 be returned in accordance with M.P.E.P. §609.

RELEVANCE OF EACH DOCUMENT

The document listed on the attached PTO-1449 discloses that broccoli sprouts contain sulphoraphane, a type of glucosinolate. However, *inter alia*, this document neither discloses that broccoli sprouts are rich in glucosinolates, nor teaches a method of preparing a food product rich in glucosinolates, for example, having at least 200,000 units per gram of fresh weight of Phase 2-inducing potential, nor teaches when to harvest the sprouts to achieve these results, as claimed in the present invention.

Respectfully submitted,

February 25, 1998
Date


Richard C. Peet
Reg. No. 35,792

FOLEY & LARDNER
3000 K Street, N.W., Suite 500
Washington, DC 20007-5109
Tel: (202) 672-5300

[illegible]

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[illegible]

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[illegible]

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered.
Include copy of this form with next communication to applicant.

[illegible]

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[illegible]

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered.
Include copy of this form with next communication to applicant.

9

9

Paper Number

9

9

9



UNITED STATES DEPARTMENT OF COMMERCE
 Patent and Trademark Office
 Address: COMMISSIONER OF PATENTS AND TRADEMARKS
 Washington, D.C. 20231

APPLICATION NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO.
--------------------	-------------	-----------------------	------------------

EXAMINER

ART UNIT	PAPER NUMBER
----------	--------------

1761
 DATE MAILED:

04/24/98

This is a communication from the examiner in charge of your application.
 COMMISSIONER OF PATENTS AND TRADEMARKS

OFFICE ACTION SUMMARY

- ☒ Responsive to communication(s) filed on 4/11/97, 12/24/97, and 2/25/98
- ☐ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 D.C. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

- ☒ Claim(s) 69-86 is/are pending in the application.
- Of the above, claim(s) _____ is/are withdrawn from consideration.
- ☐ Claim(s) _____ is/are allowed.
- ☒ Claim(s) 69-86 is/are rejected.
- ☐ Claim(s) _____ is/are objected to.
- ☐ Claim(s) _____ are subject to restriction or election requirement.

Application Papers

- ☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- ☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been
- ☐ received.
- ☐ received in Application No. (Series Code/Serial Number) _____
- ☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

- ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- ☒ Notice of Reference Cited, PTO-892
- ☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____
- ☐ Interview Summary, PTO-413
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Notice of Informal Patent Application, PTO-152

2-D12

--SEE OFFICE ACTION ON THE FOLLOWING PAGES--

Serial Number: 08/840234

Page 2

Art Unit: 1761

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 69-86 are rejected under 35 U.S.C. 103(a) as being unpatentable over The Sprout House Cookbook in view of Beecher (Am. J. Clin. Nutr., A9), Zhang et al (A11), Zhang et al (A4), and Cho et al ('986).

The Sprout House Cookbook discloses broccoli sprouts. The production of sprouts (e.g. broccoli) is notoriously well-known.

The claims differ as to the specific recitation of enzyme-inducing potential and glucosinolates..

Zhang et al disclose the anticarcinogenic activities of isothiocyanates (see pages 1976s-1981s).

Beecher discloses the cancer preventive properties of varieties of Brassica oleracea (see pages 1166s-1170s).

Zhang et al disclose a major inducer of anticarcinogenic protective enzymes from broccoli (see pages 2399-2403).

Cho et al disclose chemoprotective isothiocyanates (see entire patent).

It would have been obvious to a person of ordinary skill in the art, at the time the invention was made, that the process of preparing the product of The Sprout House Cookbook

Serial Number: 08/840234

Page 3

Art Unit: 1761

would be rich in chemoprotective agents as Beecher, Zhang et al (A11), Zhang et al (A4), and Cho et al all teach the cancer preventive properties of *Brassica*.

In the absence of unexpected results, it is not seen how the claimed invention differs from the teachings of the prior art. Applicant's claims are drawn to a combination of known components which produces expected results, see In re Kerkhoven 205 USPQ 1069 and In re Gershon 152 USPQ 602.

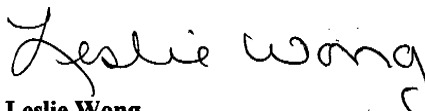
All of the claim limitations have been considered. None of them are seen as serving as basis for patentability.

No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leslie Wong whose telephone number is (703) 308-1979. The examiner can normally be reached on Tuesday-Thursday from 6:30 AM to 5:00 PM.

The fax number for this Group is (703) 305-7718.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0661.


Leslie Wong
Primary Examiner
Art Unit 1761

LAW
April 23, 1998

[illegible]

TO SEPARATE, HOLD TOP AND BOTTOM EDGES, SNAP-APART AND DISCARD CARBON

FORM PTO-892 (REV. 2-92)		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		SERIAL NO. 08/840234	GROUP/ART UNIT 1761	ATTACHMENT TO PAPER NUMBER 9
NOTICE OF REFERENCES CITED				APPLICANT(S) Fahey		
U.S. PATENT DOCUMENTS						
*	DOCUMENT NO.	DATE	NAME	CLASS	SUB-CLASS	FILING DATE IF APPROPRIATE
A						
B						
C						
D						
E						
F						
G						
H						
I						
J						
K						
FOREIGN PATENT DOCUMENTS						
*	DOCUMENT NO.	DATE	COUNTRY	NAME	CLASS	SUB-CLASS
L						
M						
N						
O						
P						
Q						
OTHER REFERENCES (Including Author, Title, Date, Pertinent Pages, Etc.)						
R						
S						
T						
U						
EXAMINER Leslie Woong			DATE 4/23/98			
* A copy of this reference is not being furnished with this office action. (See Manual of Patent Examining Procedure, section 707.05 (a).)						

10

10

Paper Number

10

10

10



UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

08/840234

SERIAL NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKETT NO.
---------------	-------------	-----------------------	----------------------

EXAMINER

ART UNIT	PAPER NUMBER
----------	--------------

DATE MAILED:

10

EXAMINER INTERVIEW SUMMARY RECORD

All participants (applicant, applicant's representative, PTO personnel):

(1) Richard Peel (3) Paul Talalay
(2) Jed Fahey (4) Leslie Wong

Date of interview 6/10/98Type: ☐ Telephonic ☒ Personal (copy is given to ☐ applicant ☒ applicant's representative).Exhibit shown or demonstration conducted: ☒ Yes ☐ No. If yes, brief description: Presentation of summary of invention and distinction over the prior art.Agreement ☒ was reached with respect to some or all of the claims in question. ☐ was not reached.Claims discussed: allIdentification of prior art discussed: that citedDescription of the general nature of what was agreed to if an agreement was reached, or any other comments: Discussed

applicability of applied references. Applicant's method is directed to sprouts containing high Phase 2 enzyme-inducing potential and non-toxic levels of indoleglucosinolates and their breakdown products. Also discussed possible doubts

(A fuller description, if necessary, and a copy of the amendments, if available, which the examiner agreed would render the claims allowable must be attached. Also, where no copy of the amendments which would render the claims allowable is available, a summary thereof must be attached.)

☒ It is not necessary for applicant to provide a separate record of the substance of the interview.

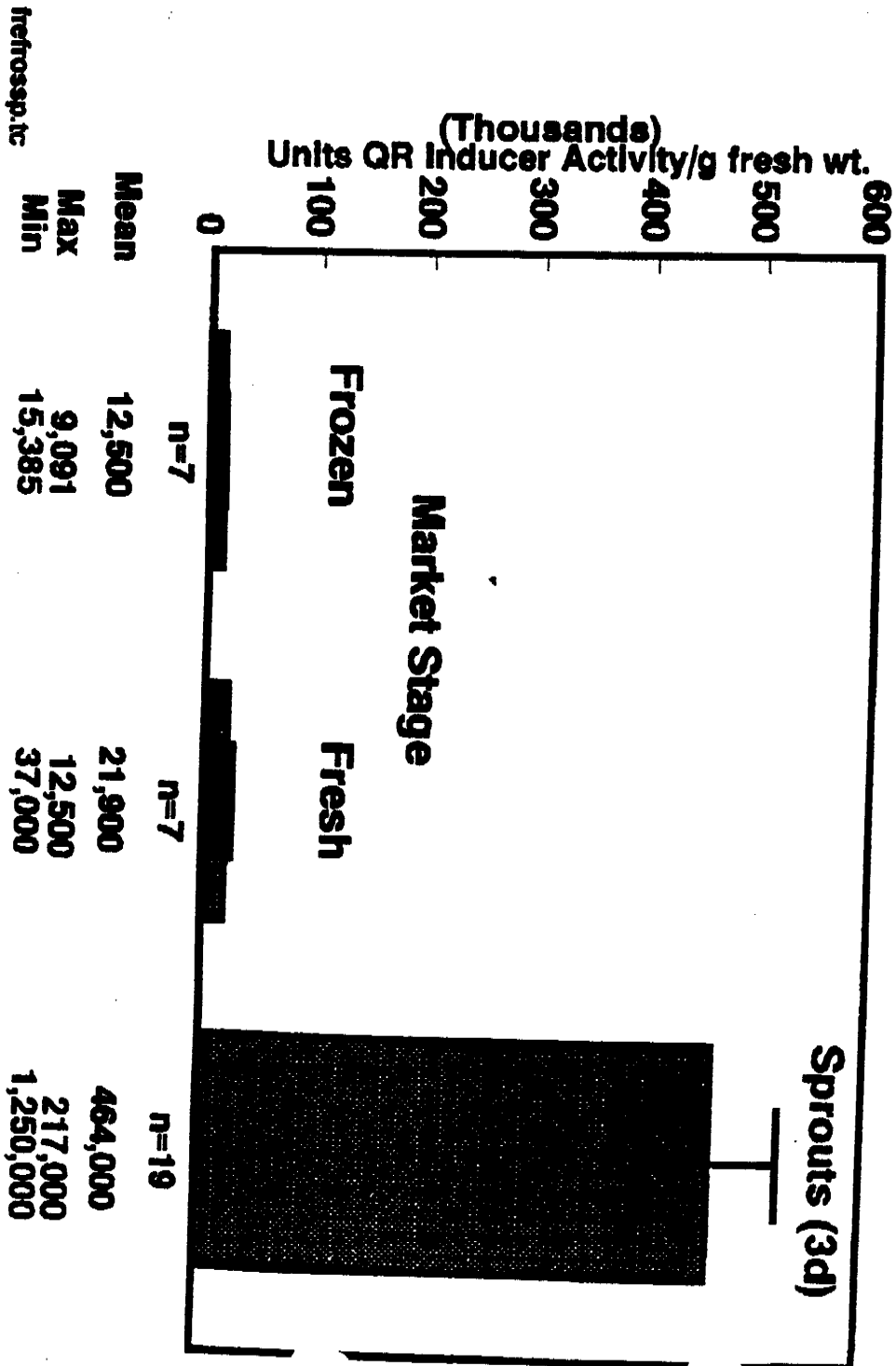
Unless the paragraph below has been checked to indicate to the contrary, A FORMAL WRITTEN RESPONSE TO THE LAST OFFICE ACTION IS NOT WAIVED AND MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW (e.g., items 1-7 on the reverse side of this form). If a response to the last Office action has already been filed, then applicant is given one month from this interview date to provide a statement of the substance of the interview.

- ☐ 2. Since the examiner's interview summary above (including any attachments) reflects a complete response to each of the objections, rejections and requirements that may be present in the last Office action, and since the claims are now allowable, this completed form is considered to fulfill the response requirements of the last Office action. Applicant is not relieved from providing a separate record of the substance of the interview unless box 1 above is also checked.

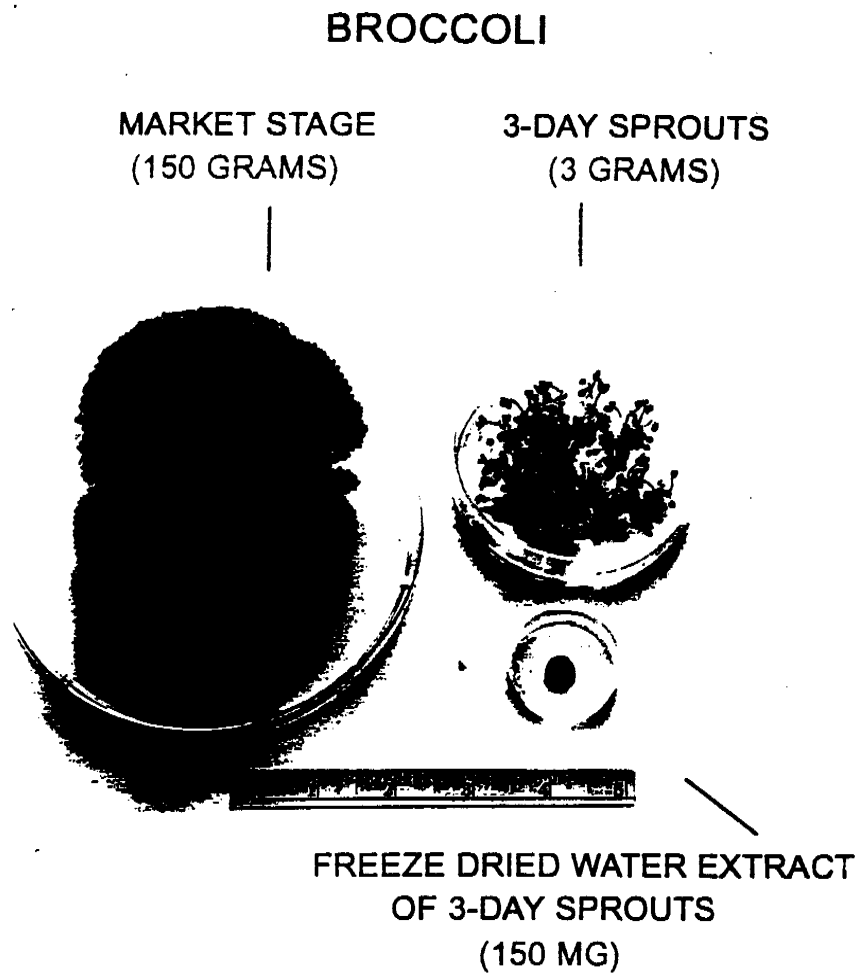
1

Phase 2 Enzyme Inducer Activity of Broccoli

Data [except for frozen] from Tables 1 & 3 of Patent Application



2

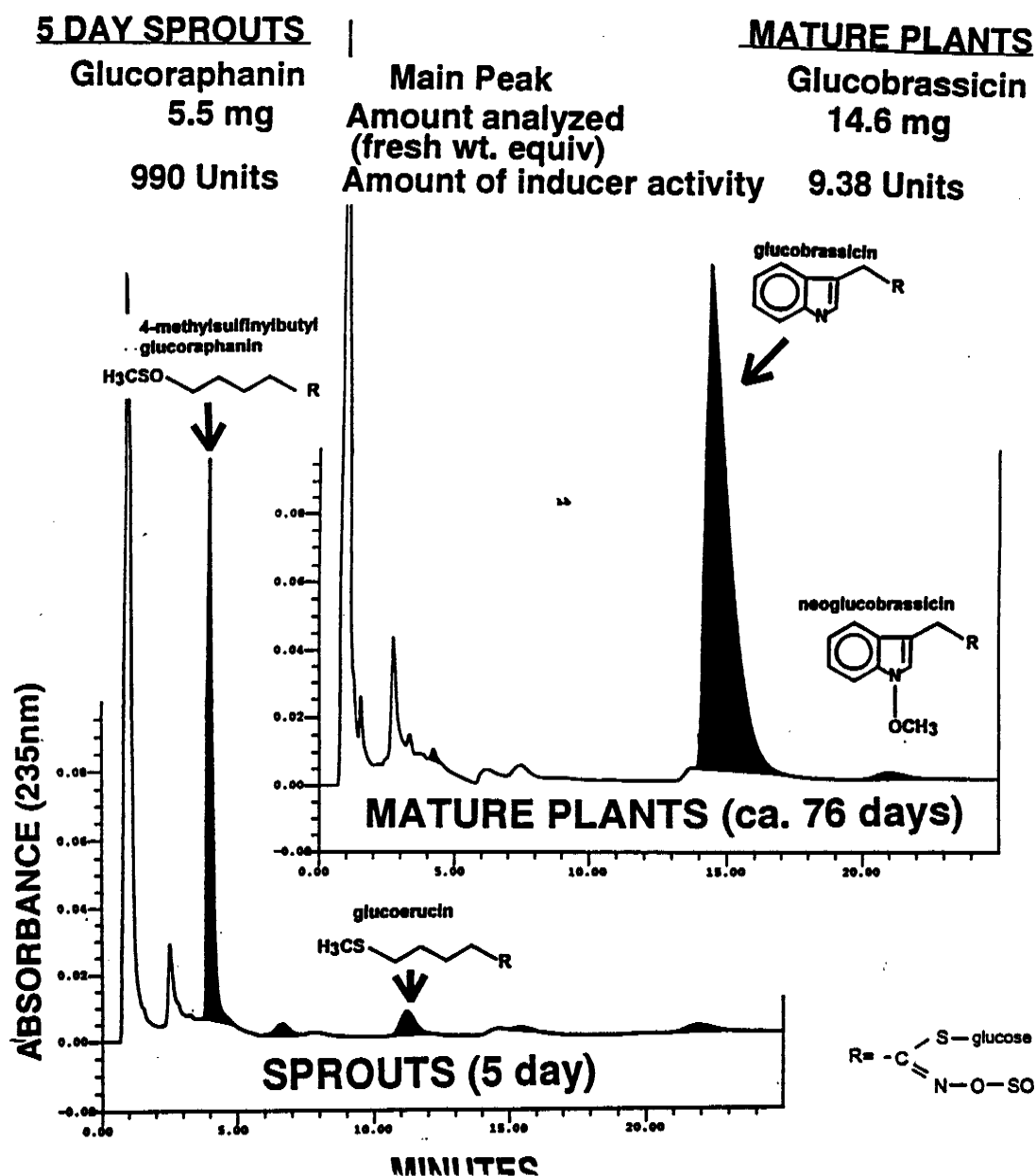


**ALL PREPARATIONS CONTAIN THE SAME QUANTITY
(2-1/4 MILLION UNITS) OF ANTICARCINOGENIC
ENZYME INDUCER ACTIVITY**

FIGURE 1

3

PAIRED ION CHROMATOGRAPHY SHOWING GLUCOSINOLATE PROFILES OF BROCCOLI (cv. SAGA)



11

11

Paper Number

11

11

11

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Attorney Docket No. 046528/0109

In re patent application of
Jed FAHEY et al.

Group Art Unit: 1761

Serial No. 08/840,234

Examiner: L. Wong

Filed: April 11, 1997

For: CANCER CHEMOPROTECTIVE FOOD PRODUCTS

AMENDMENT AND REQUEST FOR RECONSIDERATION
UNDER 37 C.F.R. § 1.111

Assistant Commissioner for Patents
Washington, D.C. 20231

JUN 30 1998
GROUP 1100

Sir:

In response to the Official Action mailed April 24, 1998, applicants respectfully request the USPTO amend the application in the manner set out below and that the examiner reconsider the outstanding rejections in view of the following remarks.

IN THE CLAIMS:

Please add the following new claims:

¹
~~187~~. The method according to claim ~~69~~, wherein said seeds produce cruciferous sprouts containing at least 200,000 units per gram fresh weight of Phase 2 enzyme-inducing potential measured after 3-days of growth.

²⁰
~~88~~. The method according to claim ~~69~~, wherein said seeds produce cruciferous sprouts containing at least 300,000 units per gram fresh weight of Phase 2 enzyme-inducing potential measured after 3-days of growth.

²¹
~~89~~. The method according to claim ~~69~~, wherein said seeds produce cruciferous sprouts containing at least 400,000 units per gram fresh weight of Phase 2 enzyme-inducing potential measured after 3-days of growth.

[Serial No. 08/840,234]

E1 22 90. The method according to claim 69, wherein said seeds produce cruciferous sprouts containing at least 500,000 units per gram fresh weight of Phase 2 enzyme-inducing potential measured after 3-days of growth.--

IN THE SPECIFICATION:

Please amend the specification as follows:

E2 On page 1, between lines 3 and 4, insert -This is a continuation of application serial No. 08/528,858 filed September 15, 1995, now U.S. Patent No. 5,725,895.--

REMARKS

Claims 69-86 were rejected in the first Official Action mailed April 24, 1998. New claims 87-90 are presented by means of this amendment. Support for new claims 87-90 is found on page 20, lines 25-34 of the specification. Accordingly, claims 69-90 are pending and presented for reconsideration by the examiner.

I. INTERVIEW

Applicants and their representative thank Examiner Wong for the courtesies extended during an interview held at the USPTO on June 10, 1998. Examiner Wong indicated that claims 69-86 are allowable over the prior art of record.

II. THE OBVIOUSNESS REJECTION

Claims 69-86 are rejected under 35 U.S.C. § 103(a) in view of Meyerowitz, S., SPROUT IT: ONE WEEK FROM SEED TO SALAD, Sprout House, Inc., Great Barrington, MA, pages 20-21, 85-86, and 120-123 (1993) which is inadvertently referred to in our Information Disclosure Statement (IDS) as "THE SPROUT HOUSE COOKBOOK", in view of Beecher, Christopher, W.W., *Am. J. Clin. Nutr.* 59 (Suppl): 1166-1170S (1994); Zhang et al., *Proc. Nati. Acad. Sci. USA* 89: 2399-2403 (1992); Zhang et al., *Cancer Research* 54 (Suppl): 1976-1981S (1994) and Cho et al., U.S. Patent 5,411,986.

Serial No. 08/840,234

It is respectfully asserted that the examiner has failed to set forth a *prima facie* case of obviousness. None of the prior art references cited by the examiner in the Official Action, either alone, or in combination, teach or suggest the claimed methods for preparing food products comprised of the designated cruciferous sprouts, or extracts made from these sprouts.

A. The Prior Art Fails to Teach or Suggest Methods for Preparing Food Products Comprised of the Recited Cruciferous Sprouts or Extracts of These Sprouts

The examiner takes the position that Meyerowitz, S., SPROUT IT: ONE WEEK FROM SEED TO SALAD, The Sprout House, Inc., Great Barrington, MA, pages 20-21, 85, and 120-123 (1993) teaches that "[t]he production of sprouts (e.g., broccoli) is notoriously well-known." (page 2, lines 11-12). Mr. Meyerowitz does not teach that the claimed sprouts are well known. The teaching of Meyerowitz does not even indicate that the claimed sprouts have been made.

Mr. Meyerowitz simply suggests that certain vegetables and sprouts may contain sulforaphane. This suggestion is based on research conducted by the inventors of the instant application at Johns Hopkins University Medical School as noted on page 121 of the Meyerowitz publication. Significantly, Mr. Meyerowitz incorrectly teaches on page 122 of this same publication that carrots and green onions contain sulforaphane. These vegetables do not contain sulforaphane, but each contains a Phase 2 enzyme inducer that is not chemically related to sulforaphane. This important error demonstrates that Mr. Meyerowitz was simply speculating about the anti-cancer potential of these vegetables and could not have known that the food product comprised of cruciferous sprouts produced by the claimed method has advantageous properties revealed by the inventors of the instant application.

Serial No. 08/840,234

Mr. Meyerowitz does not teach or suggest that the claimed method of producing a food product comprised of identifying cruciferous seeds which produce sprouts containing high Phase 2 enzyme-inducing potential and non-toxic levels of indole glucosinolates and their breakdown products and goitrogenic hydroxybutenylglucosinolates; germinating these seeds; and harvesting the sprouts between the onset of germination up to and including the 2-leaf stage to form a human food product comprising a plurality of sprouts.

Beecher simply summarizes evidence suggesting that consumption of vegetables produced by varieties of *Brassica oleracea*, including broccoli, cauliflower and cabbage, reduce cancer risk. Beecher therefore does not teach or suggest methods for the production of food products comprised of the recited cruciferous sprouts or sprout extracts.

Likewise, the two Zhang articles and the Cho patent fail to teach or suggest methods for the production of food products comprised of the recited cruciferous sprouts or sprout extracts. The Zhang references describe the characterization of anticarcinogenic isothiocyanates found in cruciferous **vegetables**. The Cho patent describes and claims pharmaceutical compositions comprising sulforaphane, and analogues of sulforaphane, that are anticarcinogenic.

The examiner takes the position that:

[i]t would have been obvious to a person of ordinary skill in the art, at the time the invention was made, that the process of preparing the produce of The Sprout House Cookbook would be rich in chemoprotective agents as Beecher, Zhang et al., (A11), Zhang et al. (A4), and Cho et al. all teach the cancer preventive properties of *Brassica*.

(paragraph bridging pages 2 and 3). However, the cited prior art fails to teach or suggest a method of making a human food product comprising the steps of identifying cruciferous seeds which produce sprouts containing high Phase 2 enzyme-inducing potential

Serial No. 08/840,234

and non-toxic levels of indole glucosinolates and their breakdown products and goitrogenic hydroxybutenyl glucosinolates; germinating these seeds; and harvesting sprouts between the onset of germination up to and including the 2-leaf stage to form a food product comprising a plurality of sprouts.

B. The Cruciferous Sprouts and Sprout Extracts Prepared According to the Claimed Methods Contain Unexpectedly High Levels of Phase 2 Enzyme Inducer Activity and Unexpectedly Low Levels of Phase 2 Enzyme Inducer Activity

Even assuming the examiner had set forth a *prima facie* case of obviousness, clear evidence of unexpected results contained in the specification has been overlooked. Proof of an unexpected improvement can rebut a *prima facie* case of obviousness. *In re Costello*, 480 F.2d 894, 178 USPQ 290 (CCPA 1973). Specifically, the methods of the instant invention provide food products that have unexpected health benefits compared to food products available in the prior art.

More specifically, the claimed methods of the instant application provide food products comprised of certain cruciferous sprouts, and sprout extracts, with greatly increased levels of Phase 2 inducer activity compared to mature market stage vegetables. As a consequence, a significant health benefit can be realized through ingestion of small quantities of cruciferous sprouts, or sprout extracts, prepared according to the claimed methods. The same health benefits can only be realized, if at all, through the ingestion of impractical large quantities of market stage vegetables that contain significantly lower quantities of anticarcinogenic Phase 2 inducer activity compared to the sprouts of the instant invention.

Phase 2 enzymes conjugate functionalized products with endogenous ligands (e.g., glutathione, glucuronic acid, sulfate) and thereby serve primarily a detoxifying role in xenobiotic metabolism. There is very good evidence indicating that when

Serial No. 08/840,234

Phase 2 enzymes are induced, animals and cells are protected against the toxic and neoplastic effects of carcinogens. In fact, anticarcinogens have been identified based on their ability to induce Phase 2 enzymes. See, for example, Talalay, Paul, *Chemical Protection Against Cancer by Induction of Electrophile Detoxification (Phase II) Enzymes*, In: CELLULAR AND MOLECULAR TARGETS OF CHEMOPREVENTION, V.E. Steele et al., (eds.), CRC Press, Boca Raton, Florida (1992).

The ability of Phase 2 enzyme inducers, such as isothiocyanates, to block carcinogenesis has been known for many years. See, for example, Zhang et al., *Cancer Research* 54 (Suppl): 1976-1981S (1994). In addition, numerous epidemiological studies suggest that high consumption of yellow and green vegetables, especially those of the family Cruciferae and the genus *Brassica* such as cauliflower, cabbage or broccoli reduces the risk of developing cancer of various organs. See, for example, Graham et al., *J. Natl. Cancer Inst.* 61: 709-714 (1978). However, the quantity of mature market stage vegetables that must be consumed in order to provide even a 50% reduction in cancer risk ratio is so very large as to be difficult for many individuals and further risk reduction is impractical.

Dr. Talalay notes in the accompanying Rule 132 Declaration, attached hereto as Appendix A that consumption of 425 g/wk of mature market stage *Brassica* vegetables, such as broccoli, would result in an odds ratio of approximately 0.5 (50% risk reduction) for colon cancer. It is frequently impractical and many individuals cannot tolerate consumption of such a large quantity of market stage broccoli each week. The large quantity of fiber and other phytochemicals associated with the consumption of such large quantities of this vegetable is likely to cause bowel irritation and/or flatulence in a significant portion of the population. In addition, many individuals dislike the taste of cruciferous vegetables and will not consume such large quantities for this reason.

Serial No. 08/840,234

Cruciferous sprouts prepared according to the instant invention provide 20 to 50-fold higher levels of Phase 2 enzyme inducer activity than mature, market stage cruciferous vegetables (see Appendix A1). Accordingly, much smaller quantities of the sprouts can be consumed to realize the same health benefit obtained through consumption of larger quantities of mature market stage vegetables. Dr. Talalay in the accompanying Rule 132 Declaration calculates that 3 grams of 3-day old sprouts, or 150 milligrams of lyophilized hot water extract of sprouts, contain the same quantity of Phase 2 inducer activity as 150 grams of mature market stage broccoli. The quantity of mature market stage broccoli, sprouts and sprout extracts that must be consumed to realize the same health benefit (2-1/4 million units of anticarcinogen Phase 2 enzyme inducer activity) is shown in Appendix A2 attached to Dr. Talalay's Rule 132 Declaration.

Another unrecognized and unexpected benefit of the claimed methods is to provide food products comprised of certain cruciferous spouts and sprout extracts that do not contain significant levels of Phase 1 inducer activity, derived from indole glucosinolates. Phase 1 enzymes (cytochromes P-450) functionalize compounds, usually by oxidation or reduction. Although one role of Phase 1 enzymes is to detoxify xenobiotics, **several cytochromes P-450 activate various types of procarcinogens to highly reactive ultimate carcinogens.**

Attached to Dr. Talalay's Rule 132 Declaration as Appendix A3 are graphs showing comparative paired ion chromatographs of broccoli sprouts and mature market stage broccoli. The paired ion chromatographs were prepared according to the method developed in his laboratory by Prestera et al., *Anal. Biochem.* 239: 168-179 (1996). The principal peaks are glucoraphanin, glucoerucin, glucobrassicin and neoglucobrassicin (Appendix A3) The former two glucosinolates are alkylthioglucosinolates with potent Phase 2 enzyme inducer activity and are the predominant glucosinolates found in sprouts. The latter two glucosinolates are indole glucosinolates which predominate in mature market

Serial No. 08/840,234

stage broccoli. The indole glucosinolates are (1) very weak Phase 2 enzyme inducers; (2) are bifunctional inducers and therefore induce both Phase 1 and Phase 2 enzymes; (3) degrade to produce condensation products which bind to the Ah receptor and induce certain cytochromes P-450 that activate carcinogens; and (4) may actually enhance carcinogenic activity. Accordingly, the food products of the instant invention not only contain unexpectedly high levels of anticarcinogenic Phase 2 inducer activity but also contain unexpectedly low levels of carcinogenic Phase 1 enzyme inducer activity.

C. Conclusion

The prior art does not teach or suggest methods for production of human food products comprised of the recited cruciferous sprouts or sprout extracts. Accordingly, the examiner has failed to set forth a *prima facie* case of obviousness. Although unnecessary to overcome the examiner's obviousness rejection because of the lack of a *prima facie* case of obviousness, evidence of totally unexpected results is presented. The claimed methods of the instant application provide food products comprised of certain cruciferous sprouts, and sprout extracts, with greatly increased levels of Phase 2 inducer activity compared to mature market stage vegetables. Additionally, food products prepared according to the claimed invention do not contain significant levels of Phase 1 inducer activity which may actually enhance carcinogenic activity.

It is therefore respectfully urged that the claims are not obvious over the prior art cited by the examiner and the rejection should be withdrawn.

Serial No. 08/840,234

For all the foregoing reasons, it is respectfully urged that the present claims are in condition for allowance. An early notice to this effect is earnestly solicited. Should there be any questions regarding this application, Examiner Wong is invited to contact the undersigned at the number shown below.

Respectfully submitted,

June 30, 1998
Date

Bernhard D. Saxe
Bernhard D. Saxe
Reg. No. 28,665

FOLEY & LARDNER
Suite 500
3000 K Street, N.W.
Washington, DC 20007-5109
(202) 672-5300

12

12

Paper Number

12

12

12



**UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office**

Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
-----------------	-------------	----------------------	---------------------

FULLY NOD VENTURE
SUITE 300
3000 K STREET NW
WASHINGTON DC 20007-1000

EXAMINER

ART UNIT	PAPER NUMBER
----------	--------------

DATE MAILED: 09/10/98

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No. 08/840234	Applicant(s) Fahey	
	Examiner L. Wong	Group Art Unit 1761	

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Period for Response

A SHORTENED STATUTORY PERIOD FOR RESPONSE IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a response be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for response specified above is less than thirty (30) days, a response within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for response is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to respond within the set or extended period for response will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

☒ Responsive to communication(s) filed on 6/30/98

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

☒ Claim(s) 69-90 is/are pending in the application.

Of the above claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 69-90 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claim(s) _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____.

Attachment(s)

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☒ Notice of References Cited, PTO-892

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Interview Summary, PTO-413

☐ Notice of Informal Patent Application, PTO-152

☐ Other _____

Office Action Summary

Serial Number: 08/840234

Page 2

Art Unit: 1761

Claims 69-90 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-16 of U.S. Patent No. 5,725,895. Although the conflicting claims are not identical, they are not patentably distinct from each other because the recitation of "human" is obvious.

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321© may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Serial Number: 08/840234

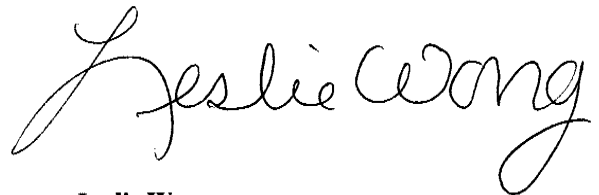
Page 3

Art Unit: 1761

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leslie Wong whose telephone number is (703) 308-1979. The examiner can normally be reached on Tuesday-Thursday from 6:30 AM to 5:00 PM.

The fax number for this Group is (703) 305-7718.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0661.

A handwritten signature in cursive script that reads "Leslie Wong". The signature is written in black ink and is positioned above the printed name and title.

Leslie Wong
Primary Examiner
Art Unit 1761

LAW
September 3, 1998

FORM PTO-892 (REV. 2-92)		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		SERIAL NO. 08/840234	GROUP ART UNIT 1761	ATTACHMENT TO PAPER NUMBER 12		
NOTICE OF REFERENCES CITED				APPLICANT(S) Fahey				
U.S. PATENT DOCUMENTS								
*	A	DOCUMENT NO.	DATE	NAME	CLASS	SUB- CLASS	FILING DATE IF APPROPRIATE	
		5725895	3/98	Fahey et al.	426	49		
	B							
	C							
	D							
	E							
	F							
	G							
	H							
	I							
	J							
	K							
FOREIGN PATENT DOCUMENTS								
*	L	DOCUMENT NO.	DATE	COUNTRY	NAME	CLASS	SUB- CLASS	PERTINENT SHTS. DWG.
	M							
	N							
	O							
	P							
	Q							
OTHER REFERENCES (Including Author, Title, Date, Pertinent Pages, Etc.)								
	R							
	S							
	T							
	U							
EXAMINER		DATE						
		Leslie Wong		9/3/98				
* A copy of this reference is not being furnished with this office action. (See Manual of Patent Examining Procedure, section 707.05 (a).)								



UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office

NOTICE OF ALLOWANCE AND ISSUE FEE DUE

1M21/0201

FOLEY AND LARDNER
SUITE 500
3000 K STREET NW P O BOX 25696
WASHINGTON DC 20007-8696

APPLICATION NO.	FILING DATE	TOTAL CLAIMS	EXAMINER AND GROUP ART UNIT	DATE MAILED
08/840,234	04/11/97	022	WINDY, I	1761 02/01/99
First Named Applicant	FOLEY, 35 USC 154(b) term ext. = 0 Days			

TITLE OF INVENTION

METHOD OF PREPARING A FOOD PRODUCT FROM CRUCIFEROUS SPROUTS
(AS AMENDED)

ATTY'S DOCKET NO.	CLASS-SUBCLASS	BATCH NO.	APPLN. TYPE	SMALL ENTITY	FEE DUE	DATE DUE
1 46528/109	420-049,000	046	UTILITY	YES	\$605.00	05/03/99

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED.

THE ISSUE FEE MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED!

HOW TO RESPOND TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.
If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

- If the status is changed, pay twice the amount of the FEE DUE shown above and notify the Patent and Trademark Office of the change in status, or
- If the status is the same, pay the FEE DUE shown above.

If the SMALL ENTITY is shown as NO:

- Pay FEE DUE shown above, or
- File verified statement of Small Entity Status before, or with, payment of 1/2 the FEE DUE shown above.

- Part B-Issue Fee Transmittal should be completed and returned to the Patent and Trademark Office (PTO) with your ISSUE FEE. Even if the ISSUE FEE has already been paid by charge to deposit account, Part B-Issue Fee Transmittal should be completed and returned. If you are charging the ISSUE FEE to your deposit account, section 4b of Part B-Issue Fee Transmittal should be completed and an extra copy of the form should be submitted.
- All communications regarding this application must give application number and batch number. Please direct all communications prior to issuance to Box ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PATENT AND TRADEMARK OFFICE COPY

13

13

Paper Number

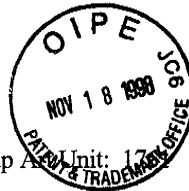
13

13

13

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Attorney Docket No. 046585/0109



In re patent application of

Jed W. FAHEY *et al.*

Serial No.: 08/840,234

Filed: April 11, 1997

For: CANCER CHEMOPROTECTIVE FOOD PRODUCTS

Group A Unit: 17
Examiner: Wong, L.

**AMENDMENT AND REQUEST FOR RECONSIDERATION
UNDER 37 C.F.R. §1.111**

Assistant Secretary and Commissioner
of Patents and Trademarks
Washington, D.C. 20231

Sir:

In response to the Official Action mailed September 10, 1998, applicants ask that the PTO amend the above-identified application as follows. A check in the amount of \$55.00 is enclosed to cover the fee for filing a terminal disclaimer. It is believed that no other fees are due. However, the Commissioner is hereby authorized to charge any deficiency or credit any overpayment to Deposit Account No. 19-0741.

Applicants respectfully request the USPTO amend the application in the manner set out below and that the examiner re-consider the outstanding rejections in view of the following remarks.

IN THE CLAIMS:

In claim 77, line 2, between "from cruciferous sprouts", and ", with the exception of", please insert —rich in glucosinolates—.

Serial No: 08/840,234

REMARKS

Claim 77 is amended to more clearly define the properties of the sprouts that are encompassed by the claimed invention. Support for the amendment is found throughout the specification and original claims as filed, for example, Page 4, Lines 2-3. Claims 69-90 are pending and presented for reconsideration by the examiner.

Claims 69-90 are pending and presented for reconsideration by the examiner. These claims were rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-16 of U.S. Patent No. 5,725,895. This rejection is rendered moot with the submission of the attached Terminal Disclaimer. Accordingly, it is respectfully requested that the rejection of claims 69-90 should be withdrawn..

Submitted herewith is a new Form PTO-1449, which corrects the citation for the document designated "ZZ" on Form PTO-1449 which was previously filed on February 25, 1998. The pages from the book authored by Steve Meyerowitz were inadvertently indicated to be in a text entitled "The Sprout House Cookbook." The Form PTO-1449 now correctly indicates that the book is entitled "Sprout It! One Week From Seeds to Salad." The examiner is kindly requested to delete the citation on the Form-1449 submitted February 25, 1998 so that the proper citation appears on the printed patent based on this application. A copy of the title page from the text, as well as the relevant pages previously submitted for consideration by the examiner, are submitted herewith for the examiner's convenience.

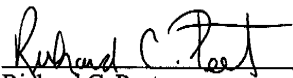
Serial No: 08/840,234

CONCLUSION

In light of the foregoing Amendments, Remarks and Terminal Disclaimer, applicants submit that all claims are in condition for allowance, and they solicit an early indication to that effect. Should there be any questions regarding this application, Examiner Wong is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

November 18, 1998


Richard C. Peet
Reg. No. 35,792

FOLEY & LARDNER
3000 K Street, N.W., Suite 500
Washington, DC 20007-5109
Tel: (202) 672-5300

14

14

Paper Number

14

14

14

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Attorney Docket No. 046585/0109

In re patent application of

Jed FAHEY *et al.*

Art Unit: 1761

Serial No. 08/840,234

Examiner: L. Wong

Filed April 11, 1997

For: CANCER CHEMOPROTECTIVE FOOD PRODUCTS

TERMINAL DISCLAIMER

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

Your Petitioner, JOHNS HOPKINS SCHOOL OF MEDICINE, 2024 E. Monument Street, Suite 2-100, Baltimore, Maryland 21205, represents that it is the owner of the entire right, title, and interest in and to U.S. Patent Application Serial No. 08/840,234, filed April 11, 1997 as evidenced by the Assignment recorded at the USPTO, Reel. No. 7694, Frame 746 (copy attached as Appendix A). Further, your Petitioner represents that it is the owner of U.S. Patent No. 5,725,895, which issued on U.S. Patent Application Serial No. 08/528,858, filed September 15, 1995 as evidenced by the Assignment recorded at the USPTO, Reel 7694, Frame 0746. Your Petitioner hereby disclaims the terminal part of the term of any patent granted on the above-identified application which would extend beyond the full statutory term of U.S. Patent No. 5,725,895, and hereby agrees that any patent so granted on the above-identified application shall be enforceable only for and during such period that the legal title to said patent shall be the same as the legal title to U.S. Patent No. 5,725,895, this agreement to run with any patent granted on the above-identified application and to be binding upon the grantee, its successors or assigns.

In making the above disclaimer, Petitioner does not disclaim any terminal part of any patent granted on the above-identified application, prior to the full statutory term of U.S. Patent No. 5,725,895, as defined in 35 USC §§154-156 and 173, in the event that U.S. Patent No. 5,725,895 expires for failure to pay a maintenance fee, is held unenforceable or is found

11/29/1998 REVENUE 00000061 00040234

01 FC:240

55.00 00